

## REMARKS

In the Action the Examiner states in claims 14, 15 and 21 , alkoxy, epoxy, amide, sulfonyl, hydroxyl and carbonyl moieties listed for R<sup>6</sup> do not contain ‘ethylenically unsaturated bonding’ as required in claims 13 or 20 for R<sup>4</sup>. The Applicant should delete these recitations. If the Applicant modifies the recitation of R<sup>4</sup> for claims 13 or 20 to include epoxies as an alternative to ethylenically unsaturated moieties then the epoxy may remain in these claims.

It is submitted that, however, the general formula 4 and the general formula 3 are independent components, Hence, it is submitted that “the compound represented by the general formula 4 is added in order to further enhance the refractive index, and is independent from the compound represented by the general formula 3 (line 16, p. 47 to line 18, p.48 of the specification). Since the general formula 4 can react with the general formula 3 by the sol-gel reaction, an ethylenically unsaturated bonding is not always necessary.

The Examiner further states that claims 6, 12, 18 and 24 are of improper dependent form for failing to further limit the subject matter of a previous claim.

However, claims 6 and 12 respectively limit a photopolymerization reactive compound of claims 1 and 8 respectively. The photopolymerization reactive compound of claims 1 and 8 is not limited to contain the ethylenically unsaturated bonding, thus, the dependent form is submitted to be proper. The photopolymerization reactive compound is not reacted with an organic-inorganic hybrid polymer. Also, claims 18 and 24 respectively serve to limit a photopolymerization reactive group of an organometallic particle of claims 13 and 20 respectively. The photopolymerization reactive group of the organometallic particle of claims 13 and 20 is note limited to contain the ethylenically unsaturated bonding, thus, the dependent form

is not improper. The organometallic particle is not reacted with the organic-inorganic hybrid polymer.

As suggested by the Examiner the term “photo-radical” has been replaced in claims 5, 11, 17 and 23. This amendment merely serves to replace the term ‘photo-radical’ with ‘free radical’ based on the condition that the meaning of the initiator, which initiates polymerization when radical is generated by light, is not changed.

The organic-inorganic hybrid polymer used in the present invention is a polymer having an ethylenically unsaturated bonding of an organic silicon compound represented by the general formula 3 and an ethylenically unsaturated bonding of an organic monomer preliminary copolymerized. As monofunctional  $\gamma$ -methacryloxypropyltrimethoxy silane and monofunctional methyl methacrylate are copolymerized to form a straight-chain polymer in Example B series of the present invention, the organic silicon compound and the organic monomer to be used are not always necessary to be difunctional or more. In the present invention, a network structure is formed by hydrolysis and polycondensation between the silicon compounds which are side chains of the organic-inorganic hybrid polymer chain formed by copolymerization between ethylenically unsaturated bondings. The organic portion is introduced to the polymer structure when the ethylenically unsaturated bondings are preliminary copolymerized so as to impart flexibility.

A reflective index modulation component used in claims 13-24 is an organo “metallic particle” having a photopolymerization reactive group. Not only by polymerization but also by a metallic component of the metallic particle originally, difference of the refractive index with the organic-inorganic hybrid polymer can be enlarged (line 26, p. 49- of the specification).

To use the organometallic “particle” as the refractive index modulation component is not mentioned in any cited documents. It cannot be anticipated from cited documents to enlarge the refractive index modulation amount and improve a film physical property at the same time by a combination of a hydrolysed polycondensate of the organic-inorganic hybrid polymer having flexibility and rigidity as mentioned above with the organometallic particle as the refractive index modulation component.

Furthermore, the Examiner notes that allegations of refractive indices, which are not supported by evidence, are unpersuasive. However, the refractive indices are demonstrate in the Declaration at the time of previous response to the Official Action. That is, while the refractive index of Example 4 in Maeda et al. is 40%, the refractive index of Example B series in the present invention is 94% as shown in the attached Declaration. In this manner, the refractive index of Example 4 in Maeda et al. is smaller than and inferior to that of Example of the present invention. Hence, the refractive index refractive index modulation amount of Example 4 in Maeda et al. calculated by Kogelnik theory from the refractive index is smaller than that of Example of the present invention. Therefore, hologram performance of Example 4 in Maeda et al. is inferior to that of Example of the present invention.

For all of these reasons it is submitted that the subject matter of the claims is patentable over the prior art of record. Favorable reconsideration is respectfully requested.

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SEYFARTH SHAW LLP  
55 East Monroe Street  
Suite 4200  
Chicago, Illinois 60603-5803  
Telephone: (312) 346-8000  
Facsimile: (312) 269-8869

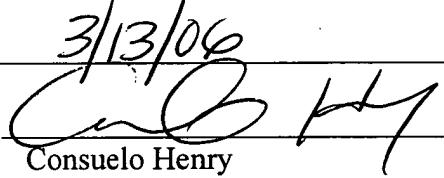
Respectfully Submitted,

Timothy J. Keefer, Reg. No. 35,567

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Consuelo Henry